Newsletter of the North American Mycological Association

THE MYCOPHILE

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More Details Revealed on NAMA '07 Foray to Pipestem State Park, West Virginia

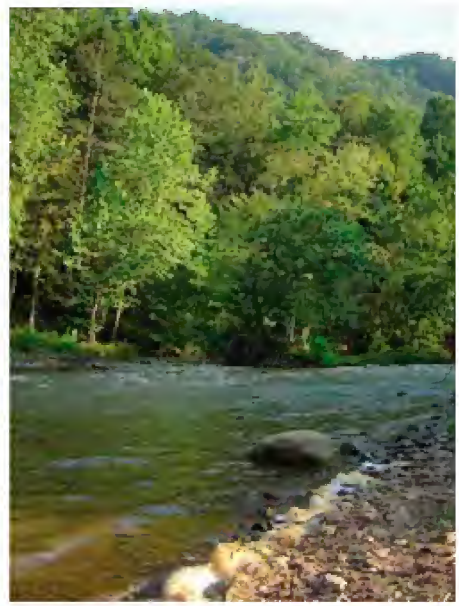
We're ready to tell you more about the upcoming Orson Miller Memorial Foray to be held at Pipestem August 16–19!

Hope Miller is coming. ***Bill Roody*** truly knows the hot foray spots, and the park personnel could not be more supportive.

Several of Orson's doctoral students have agreed to be presenters and to reflect on their days as students in this very locale. We will enjoy an update on their careers since those days.

Among them are ***Rytas Vilgalys,*** who has been on the cutting edge of fungal DNA and has made Duke University a global facility for these studies. We look forward to his enlightenment on exactly what those secretive helixes have done to us from a taxonomic standpoint.

It's been awhile since we've had a Myxomycete program, and who better than ***Steve Stephenson*** to involve us in an understanding of, and current approach to, these beauties?



Pipestem—Bluestone River from Creek Lodge.

John Walker will tackle the use of chemicals in identifying fungi, and ***Omar Isikhuemhen*** will lead us through his cultivation experiences.

Coleman McCleneghan will tackle the sometimes confusing family of the Strophariaceae.

Our Institutional Trustee, ***Walt Sundberg***, will again cover our Beginner's Program for the Educational Committee. For those who are not beginners Walt always has excellent insights into ways of approaching the higher fungi.

Of course, our Photography and Mycophagy Committees will be holding forth (don't forget to share excess fungi for Ursula's pots). The Toxicology Committee may have some interesting new data. We also have a few surprise presenters, some of whom did their tour under Orson, so we expect some unusual topics to pop up as they enrich our program.

We're planning to hold an author's get-together, since Hope and Bill will be signing their books. Hope and Orson's 2006 *North American Mushrooms* and Bill's *Mushrooms of West Virginia and the Central Appalachians* will definitely be here. We expect Syracuse University Press's new book on Southeastern Fungi will

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Exotic Foray: NAMA Heads for La Belle France

Based on interest expressed by members over the past two years, this year's "exotic foray" opportunity will be to attend the annual foray of the Société mycologique de Poitou. It is to be held in the town of Poitiers, France, Oct. 29–Nov. 3. The French society, like NAMA, includes both amateurs and professionals. The programs consist of mornings in the forests, afternoons working with the fungi, and evening programs. Identified species of fungi customarily number in the hundreds, if not more. Additional highlights this year will be lunch with the town mayor one day and an evening gala.

After the foray we plan to tour the Loire Valley and visit the mushroom museum and quarries in Samur as well as several famous castles and other interesting sites. We will return November 11, after a very brief stay in Paris. Details are being finalized at present and will be posted on our website as soon as possible. Please contact <forays@namyco.org>, should this be of interest to you.—*Allein Stanley*

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FROM THE EDITOR

Dearest NAMA Members:

Once again I am compelled to write to the readers with my sincerest apologies for yet another issue of the newsletter being delivered late. (As I write this, my copy *still* has not arrived—more than one month after the final version was sent to the printers for production and delivery.)

I had carefully planned the April Fools ("Mycophool") edition starting last year and was enthusiastic about its completion. Likewise, several contributors had been in on the gags since November and had spent a great deal of their time putting together materials for the issue. Judith and I had the issue finished and ready to go weeks in advance, to ensure a delivery for some time between the last week in March and the first week in April. It turns out that I was the only FOOL, for believing that our printers, mailers, and the U.S. Postal Service could all perform their jobs to the minimalest of their abilities and get the issue delivered on time. And as has happened repeatedly over the past four years, I was sorely disappointed.

I feel doubly apologetic to the contributors to this issue, as it seems their best intentions were mostly for naught. I realize we're now living in an age when no one is held accountable for anything anymore (numerous blunders by leaders of corporations, as well as our local, state, and federal government come to mind), but that's not how I operate. As it is my responsibility to produce the newsletter, it is also my responsibility to see to it that the job is done right. I personally put a lot of time into each newsletter and you can imagine my disappointment when—through no fault of the editors—an issue doesn't look quite right or is not delivered on time.

As mentioned, lackluster and unpredictable service—provided by our printers, mailers, and the U.S. Postal Service—has been a repeated source of frustration for me since I took over as editor in 2003. This, despite the fact that the costs to print and deliver the newsletter continue to increase. Some cursory attempts at fixing these problems during the past year or two obviously have done nothing to solve them. As a result, I am immediately enacting some changes that will cut costs, while providing better service.

Beginning with this issue, all issues of The Mycophile will be placed on the NAMA Web site. At the very least, this will insure that all issues are viewable—on time—guaranteeing that time-sensitive information will no longer reach NAMA members hopelessly late.

The table of contents for each issue of the journal *McIlvainea* also will be placed on the Web site. Besides getting important information on upcoming events and forays, fungi in the news items, book reviews, and registration materials for photo contests and forays into members' hands more quickly, I think this will also serve to attract many new members to NAMA. On the Web site you will be able to see the fabulous mushroom photography that graces the pages of The Mycophile and *McIlvainea* in beautiful color and resolution, just as the contributors intended.

Of course, more than just a few NAMA members do not have access to the Web site or do not own a computer. Fear not—the newsletter and journals will continue to be delivered to your home. However, it is my hope that in the very near future many of you will opt to forego home delivery of the newsletter altogether, in lieu of an e-mailed or Web site version. This is becoming a very popular trend with many magazines and most large-circulation newspapers. Likewise, it's becoming very popular with the local mushroom clubs across North America. The costs to print and deliver newsletters (especially if color is involved) have skyrocketed, making this new method of distribution not only cost-effective but necessary for many

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Moving?

Please send your new address, ***two weeks*** before you move, to

Ann Bornstein
NAMA Membership Secretary
336 Lenox Avenue
Oakland, CA 94610-4675
<Membership@namyco.org>

Otherwise—you may not be getting your newsletter for a while. Each issue, several *Mycophiles* are returned as undeliverable because of no forwarding address on file. NAMA is charged ***seventy cents*** for each returned or forwarded newsletter.

NAMA is a 501(c)(3) charitable organization. Contributions to support the scientific and educational activities of the Association are always welcome and may be deductible as allowed by law. Gifts of any amount may be made for special occasions, such as birthdays, anniversaries, and for memorials.

Special categories include
Friend of NAMA: $500–900
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Patron: $5000 and up

Send contributions to
Judith McCandless, Treasurer
330 Wildwood Place
Louisville, KY40206-2523
<judithmc@iglou.com>

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Web site: ***www.namyco.org***

Isaac Forester, NAMA President
P.O. Box 1107
North Wilkesboro, NC 28659-1107
<mycoCPA@aol.com>

Judy Roger, Executive Secretary
6615 Tudor Court
Gladstone, OR 97027-1032
<ExecutiveSec@namyco.org>
<jaroger@comcast.net>

Britt Bunyard, Content Editor
W184 N12633 Fond du Lac Avenue
Germantown, WI 53022
<bbunyard@wi.rr.com>

Judith Caulfield, Production Editor
927 Lansing Drive
Mt. Pleasant, SC 29464
<caulfieldst@bellsouth.net>

Mushrooming in Tibet
July 21–Aug 8, 2007

Mushroom hunting in East Tibet is certain to be a once-in-a-lifetime fungal, botanical, and cultural experience. Tibet is endowed with some of the most stunning landscapes on the planet and an incomparably rich, ancient spiritual culture. Tibetans have a long tradition in collecting (for medicinal purposes), eating, and trading mushrooms. Today, with unprecedented demand for caterpillar fungus (*Cordyceps sinensis*), matsutake, and morels, Tibet has the highest fungal income per capita in the world. Of great importance also are boletes, caesars, chanterelles, ganoderma, wood ears and many other more exotic species.

To fully appreciate the amazing natural and cultural diversity of Tibet, you must experience it firsthand. Daniel Winkler has been to Tibet and the Himalayas more than 30 times for environmental work, including mushroom and medicinal plant research, forestry work, and tour guiding. Over the years, many people have asked to accompany him on his trips to Tibet. In response he has put together a series of unique fungal forays in Tibet.

Tibetan local guides will accompany Daniel and the foray participants. All logistics will be expedited by High Asia, a specialist travel logistics provider with more than 13 years experience in Tibet. Costs are $3,900 plus airfare, with room for 12–15 participants. For details see the Web site at www.danielwinkler.com, or phone High Asia at (609) 269-5332.

2007 MSA Meeting & Foray
August 4–9, 2007
Louisiana State U, Baton Rouge

This year the Annual MSA Meeting will include a foray on August 5. See the MSA Web site for details www.msafungi.org.

NEMF—NorthEast Mycological Federation Foray
August 9–12, 2007

The 30th annual foray and 13th annual Sam Ristich Foray will be held at the University of Maine's Orono campus. Your host will be the Maine Mycological Association.

The spruce, pine, and deciduous forests with streams, rivers, and bogs around Orono provide diverse habitats for finding mycological treasures. The foray will also provide interesting lectures and workshops, good food, and a lobster banquet on Saturday night.

There is a wide range of recreational opportunities around Orono for you and your family to enjoy. Activities you can delight in within an hour of Orono are golf, fly fishing, white water rafting, canoeing, kayaking, and shopping. Some natural attractions within close driving distance include Acadia National Park, Bar Harbor, Moosehead Lake, and Baxter State Park with Mount Katahdin, and the Appalachian Trail.
All the information you'll need (and much more!) can be found at their terrific Web site www.nemf.org.

NAMA Annual Foray 2007
August 16–19, 2007
Pipestem, WV

Check out details in this and future issues of The Mycophile and on the NAMA Web site.

30th Clark Rogerson Foray
August 23–26, 2007
Moodus, CT

COMA has invited mycologists Gary Lincoff, Sam Ristich, Roz Lowen, Rod Tulloss, Sandy Sheine, and Leon Shernoff. See the Mar./Apr. issue of The Mycophile for details or contact Don Shernoff at <donshernoff@yahoo.com> or (914) 761-0332.

Fifth International Workshop on Edible Ectomycorrhizal Mushrooms
August 26–29, 2007
Chuxiong, Yunnan, China

Original announcement was in the Mar/Apr issue of The Mycophile. For information see the Web site or contact Wang Yun, Chairman of the Organizing Committee <WangY@crop.cri.nz> or <wang10melrose@yahoo.com> or Mr. Liu Zi Qiang, Organizing Committee Secretariat, at <lzqynkm@hotmail.com> or <liuziqiang@cccfna.org.cn>.

4th International Medicinal Mushroom Conference
September 23–27, 2007
Ljubljana, Slovenia

See the Mar./Apr. issue of The Mycophile for details or visit their Web site at www.immc4.si to register and obtain additional information about the congress.

2007 Gary Lincoff Mid Atlantic Mushroom Foray
September 15, 2007

You won't want to miss out on one of the largest forays in North America! The featured speaker will be Gary Lincoff, plus guest mycologists Renee Leboeuf, Bill Russell, and Dave Miller. For more information see the Mar/Apr issue of The Mycophile, or contact John Plischke, (724) 834-2358, or e-mail <morelbp@aol.com>.

2007 Mexican Mushroom Tours
Sept. 21–30, 2007

Details were printed in the Mar./Apr. issue of The Mycophile, and an itinerary outline appear on the Web site www.mexmush.com.

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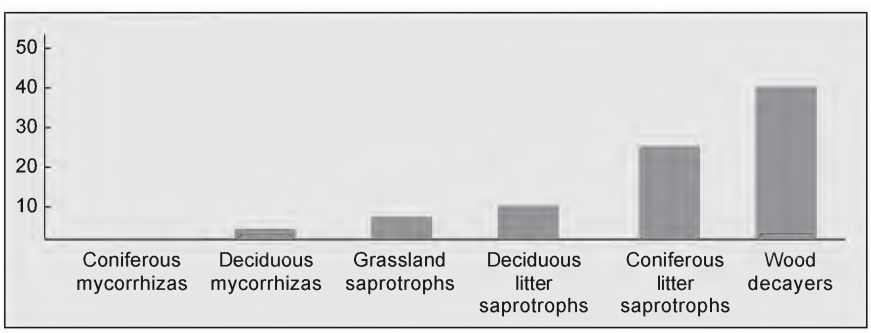
Global warming + wild mushrooms = fruitings twice per year!
In a study published just this week (as I write this) in the research journal *Science* (316[5821]: 71), British researchers have found that wild mushrooms are reproducing twice per year instead of the usual once in the UK—perhaps the most striking example of how global warming is turning up the heat on the world's wildlife. This is the first time climate change has been reported to affect the life cycle of any organism in this way. (A few studies have shown that flowering plants are flowering earlier than ever before.)

The study, conducted by Alan Gange and colleagues, surveyed 315 species of fungi—from 52,000 records—and found that over a 56-year time period, many species have doubled the length of their breeding season from 33 days on average to 74. Species now form sporocarps twice per year, fruiting once in the British spring and again in the autumn, something unheard of before temperatures began to climb in the mid-1970s. Gange believes that the fungi used to be kept in check by sharp frosts earlier in the year. As temperatures have climbed, and the frosts disappeared, there is nothing forcing the fungi to remain dormant in the soil.

Fruiting of mycorrhizal species that associate with both deciduous and coniferous trees is delayed in deciduous—but not coniferous—forests. That many species are now fruiting twice per year may indicate increased mycelial activity and possibly greater decay rates in ecosystems. In the graph reproduced below (by permission of the author) bars represent the proportion of species in each habitat group that, before 1975, were not recorded as fruiting in spring, but after this time did so in at least one year. Nineteen seventy-five was the first year in which spring fruiting of any species occurred.



Fungi as a biofuel tool . . . With the recent interest in green plants as a source of renewable energy, one team of researchers from Stanford and Oklahoma State University is looking into using fungal enzymes to study plant cell walls. Why?

Plant cell wall polysaccharides are some of the most abundant organic compounds on earth and have become the focus of recent interest in "biofuels," such as ethanol, synthesized through the processing of the polysaccharide cellulose. Studying the structure of such polysaccharides is difficult because they are large molecules that are frequently branched in irregular ways. However, fungi can naturally degrade the cell wall sugars with a large variety of enzymes that can cut the polysaccharides at specific locations.

Stefan Bauer et al. searched recently completed genomic DNA sequences of three fungi (*Aspergillus nidulans*, *A. fumigatus*, and *Neurospora crassa*) for genes encoding various types of enzymes and have determined 74 fungal enzymes of importance. The genes for these enzymes were inserted into common yeast cells and grown up in the lab. The recombinant enzymes were reported (*Proceedings of the National Academy of Sciences* 103[30]: 11417–11422) to be very effective in research to unravel the makeup of plant cell walls and may one day lead to a way to turn the entire corn plant (not just the fruit) into ethanol. Realistically, it is only then that corn-based ethanol will become a viable source of fuel for this country.

. . . and as a cure for sick fowl
Wide use of a mushroom extract to protect poultry against a major parasitic disease is now closer, thanks to a USDA–Agricultural Research Service (ARS) scientist and her South Korean colleagues. The researchers developed a technique for controlling coccidiosis, which costs the world's poultry industry billions of dollars in losses annually.

The new method is the subject of a patent application. It introduces mushroom lectins extracted from the mushroom *Fomitella fraxinea* (a wood-rotting mushroom seen mostly on black locust tree stumps) to birds via injection into developing embryos, or through drinking water. Once administered, the lectins spur a protective reaction against the disease in the gut.

Coccidiosis is caused by parasites of the genus *Eimeria* that infect the intestinal tract and are transmitted between birds through infected feces. Often most severe in young birds or those whose disease immunity has been weakened by other infections, the disease can cause all sorts of severe symptoms as well as death.

Lectins are carbohydrate-binding proteins found in animals and plants. They stimulate disease-fighting cells by binding to their sugar residues, inducing the release of potent immune-system proteins called cytokines. The report was

published in the journal *Poultry Science* (85: 446–51).

Truffle Kerfuffle . . . times 3! Freelance writer Amy Cortese seems to have a nose for truffles. Beginning last fall, I noticed her name on several articles having to do with the pricey subterranean sporocarps. She covered everything from the big fall truffle harvest in Europe to their arrival—and problems, therein—in the U.S., and managed to take time out from her sampling (she described eating truffles at several restaurants—lucky so-and-so!) to offer some handy tips for the less fortunate consumer.

One tip is that, unlike the black truffle, the white truffle ("tartufo bianco") should never be cooked but only eaten raw, usually thinly shaved or grated. Another tip is to avoid grocery-store truffle oils as they are usually artificially flavored.

Ms. Cortese wrote in *Business Week* (11/20/06, p. 104) that in truffle season many big-city restaurant menus will suggest dishes to which truffles can be added for a supplemental fee, typically $6–$10 a gram. Beware: ordering enough to cover the food—a modest five- or six-gram serving—can quickly add up!

Still, that's cheaper than purchasing an entire truffle. One good-sized truffle—golf-ball-size or larger—can fetch a small fortune. Prices, this season (Oct. '06–Jan. '07), were as much as $2,500 a pound, and last year a rare 2.6-pound white truffle commanded a record 95,000 €, or $121,000, at a charity auction in Italy (as dutifully reported here in The Mycophile).

But what happens when one (or a sack full) of these precious tubers goes missing—or gets confiscated at the border? Ms. Cortese covered the story in the pages of *New York* magazine (39[43]: 14). It seems a certain Mr. Tony May, owner of midtown Manhattan's haute-cuisine Italian wallet-buster San Domenico, was at the airport, nervously awaiting hand-delivery of a sack of truffles (thousands of dollars' worth) that were to be the stars of his annual White Truffle Gala and Auction. As May's courier arrived at JFK, a Homeland Security beagle sniffed something alarming. The courier was whisked into a back room where the pricey truffles, along with some rare red mushrooms, were spilled out onto a table. Asked their value, the courier, worried that if he said the actual amount they were worth he'd arouse real suspicion, replied "Three hundred dollars." The Customs officer was unimpressed. "You paid $300 for that?" he said of the stinky load, and let him go. It is understandable why Mr. May was so nervous: a single one of those truffles (200 grams) sold at auction for $1,300!

The price of truffles is certainly prohibitive for me use. But if one man in Tennessee has his way, the price may be about to take a nosedive (wouldn't *that* be terrific!). Tom Michaels, a 59-year-old plant pathologist with years of research on truffle fungi under his belt, has set up a farm near Chuckey, TN, sprouted a bunch of hazelnut trees from seeds, and inoculated their roots with *Tuber melanosporum,* the Périgord truffle. He planted them seven years ago . . . and sat back to wait for something to happen. Dr. Michaels was, of course, well aware of previous failed attempts to cultivate truffles in the U.S. No doubt he tried to remain very cautiously optimistic for the next seven years. Then, on the morning of Jan. 3, he noticed patches of the tawny Tennessee soil bubbling up like blistered asphalt in his orchard. It was then that Dr. Michaels lost his circumspection. It has been reported that the cries of "Eureka!" could be heard for miles on that fateful morn. And that was before he saw the size of the bulbs, before he felt them and smelled them and tasted them. Only then did Dr. Michaels realize that up to 150 pounds of world class truffles could be ripening in the ground behind feet and that he could be on to something really big! (News of this story ran in *The New York Times* February 28, 2007, as well as several other news publications.)

The truffles from Chuckey are not the first American-grown Périgord truffles, of course. They are, however, the first American-grown black truffles to be produced in large enough quantities to be considered a commercial crop. (Several other truffle farms are in various states of operation around the U.S., from the huge—albeit now defunct—farm in Texas, to farms in North Carolina, California, and elsewhere on the West Coast. By some counts there are around 300 serious farms trying to produce truffles commercially). Nearly all, however, generate most, if not all, of their sales from inoculated seedling trees that you can try growing at your own home. Readers of The Mycophile may remember my interview with Charles Lefevre, the owner of New World Truffieres in Eugene, Oregon, from a year or two ago. Incidentally, Lefevre sold 13,000 inoculated seedlings in 2006.

When is a root symbiosis mycorrhizal? The mycorrhizal basidiomycetes are known to have multiple, independent evolutionary origins from saprotrophic ancestors. To date, a number of studies have revealed functional resemblances of mycorrhizal fungi to free-living saprotrophs, but information on the ability of saprotrophic fungi to perform as mycorrhizal symbionts is scarce.

An investigation published in the latest issue of the journal *New Phytologist* (174: 441–46) was undertaken with the objective to investigate the ability of three wood-decay fungi—*Hypholoma fasciculare, Phlebiopsis gigantean*, and *Phlebia centrifuga*—to colonize fine roots of conifer seedlings. For each fungus, mycorrhizal syntheses were attempted with *Picea abies* and *Pinus sylvestris*. After 24 weeks, isolation of fungi and direct sequencing of fungal DNA were carried out from healthy-looking, surface-sterilized

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Fungi in the News, continued from page 5

root tips that yielded both pure cultures and DNA sequences of each inoculated strain. Microscopic examination showed the presence of intercellular hyphae inside the tree seedling roots.

The results of this study provide evidence of the ability of certain wood-decay fungi to colonize fine roots of tree seedlings and without causing any harm to the host. Furthermore, the researchers provide evidence that suggests mycorrhizal associations may have their evolutionary origins with fungi that intermittently formed associations with plant roots, without being pathogenic. (Thanks to Else for the tip!)

More from the research journals: One article published in the latest issue of the British *Mycological Research* (111[1]: 3–49) that I found especially noteworthy was a review paper on "geomycology," that is, the importance of fungi to the cycling of nutrients on the planet, mineral and soil formation, rock degradation, etc. This exceptionally lengthy paper (almost 50 pages) focuses on the importance of mycorrhizal and lichen symbioses.

From the Spanish journal *International Microbiology* comes a report discussing the evolutionary origins of the microbial genes that produce many of our most important antibiotics. We've all likely heard the story about how Alexander Fleming discovered penicillin. The story goes that he observed a particular strain of the asexual *Penicillium* fungus growing on a petri plate in the lab and, more importantly, noticed that wherever the mold grew, bacteria could not. Thus anti-biotics were discovered, and no longer would humans have to die from common bacterial infections.

Penicillin is just one of a large and important class of antibiotics known as β-lactams. All antimicrobials in this group share the same basic molecular structure. Besides penicillins (of which there are many types), this group includes several household names (especially if you have children prone to scrapes and sore throats) such as cephalosporins, clavams, carbapenens or monobactams. While β-lactam compounds were discovered in filamentous fungi, actinomycetes and certain bacteria also are known to produce different types of these compounds.

So the big question has always been "How is it that such evolutionarily disparate groups of microbes—from bacteria to fungi—have the same complex sets of genes and enzymes to make nearly identical antimicrobial compounds?" (In fact, I've been asked this many times while teaching microbiology courses and never had a good answer until now!)

Researchers Paloma Liras and Juan F. Martin of the University of Leon, Spain, have analyzed tons of data on the biosynthetic pathways, enzymes involved, and DNA sequences of the genes responsible and have come up with findings that strongly support the origin of the β-lactams to reside with the bacteria. The gene systems were then transferred horizontally to fungi. Horizontal gene transfer (HGT) refers to genes being moved from one organism to another that is not the offspring of the first. In this case, the organisms involved are vastly unrelated as we're talking about Prokaryotes and Eukaryotes. HGT has been a very hot topic in microbial evolutionary circles of late, is well supported by data (for Prokaryotes, anyway), and answers many long-standing questions about microbial evolution. It has only recently gotten attention as a mode of evolution for Eukaryotes.

Along those same lines: A team of researchers led by Nicholas J. Talbot report in *Current Biology* (16[18]: 1857–64) the results of a recent study showing some microbial eukaryotes have exchanged metabolic genes, which might explain some of their phenotypic similarities. Filamentous fungi and Oomycetes are eukaryotic microorganisms that grow by producing networks of thread-like hyphae, which secrete enzymes to break down complex nutrients, such as wood and plant material. These organisms are extremely similar in both appearance and lifestyle to fungi (and until recently were grouped with the true fungi) and include some of the most economically important plant pathogens. (For plant pathogenic Oomycetes, think late blight disease of potatoes and sudden oak death, among others.)

However, the morphological similarity of fungi and Oomycetes is misleading because they represent some of the most distantly related Eukaryote evolutionary groupings, and their shared growth habit is interpreted as being the result of convergent evolution. The fungi branch with the animals, whereas the Oomycetes branch with photosynthetic algae. In their report, the researchers provide strong phylogenetic evidence that multiple horizontal gene transfers (HGT) have occurred from filamentous ascomycete fungi to the distantly related Oomycetes.

They also present evidence that a subset of the associated gene families was initially the product of prokaryote-to-fungi HGT. The predicted functions of the gene products associated with fungi-to-Oomycete HGT suggest that this process has played a significant role in the evolution of the filamentous lifestyle on two separate branches of the Eukaryote evolutionary tree.

It had to happen eventually: Fungi are growing on your computer screen . . . thanks to You Tube! Although 99% of the stuff on the wildly popular Web site You Tube ranges from stupid pet tricks to stupider human tricks, I do find some worthwhile postings there from time to time. (For example, while planning an upcoming Disney World trip, I checked out some home videos shot at some of the shows there and could quickly determine ones of interest.) I must say that

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Shroom: A Cultural History of the Magic Mushroom, by Andy Letcher. New York: Ecco (HarperCollins), 2007. ISBN 978-0-06-082828-8; 360 pp.

The first thing that caught my attention about this book was the commentary about the author on the inside flap of the dust jacket. It describes Andy Letcher as being "a freelance writer, lecturer and musician living in Oxford, UK," as well as a former eco-protestor who once lived in a treehouse and who sings and plays the mandolin and English bagpipes in an acid folk band. Oh, and he has *two* PhDs: one in ecology from Oxford University, the other in religious and cultural studies. Who better to write (possibly a first for the topic) a level-headed, academic account of the use of psychotropic wild mushrooms in different cultures from around the world?

If you are looking for yet another "myconautical" rant on the mystical powers of hallucinogenic mushrooms and how they were used by our proto-human ancestors—and the space aliens who gave them to us—ultimately leading to the foundation of all the world's religions, then this book will disappoint.

Thankfully, *Shroom* is not that. The author comes across in no way as advocating the use of psychodelic mushrooms—or any illicit drugs—but does not shun those who do. Instead, he takes a nonbiased, journalistic approach of finding the facts and reporting them. Mr. Letcher has exhaustively researched the historical use of magic mushrooms, concluding that (contrary to the writings of Wasson, McKenna, and a whole gaggle of "bemushroomed" followers) the use of psychodelic mushrooms is a fairly recent phenomenon and has no connection to long-lost cultures or religions. Andy debunks a whole host of myths surrounding magic mushrooms that we have all heard over the years. His writing style on the topic is refreshingly academic (and still quite entertaining—but don't be thrown off by his British sense of humour [sic] or spelling [e.g. "gaol" for prison]) and, most importantly, fact-based (sorely lacking in most previous books on the topic). Revealed: There was no ancient mushroom cult that started all religions on the planet. Carlos Castaneda likely "made up the entire story [of Don Juan] in the library at UCLA." The legend of Santa Claus could not, in fact, have anything to do with mushrooms, and much more.

The overriding theme of the book centers on man's fascination with *Amanita muscaria,* above and beyond all other mushrooms. It has long been THE symbol of mushrooms, hallucinogenic or otherwise. Which has always seemed strange to me, as—while it is without question a beautiful mushroom—it's not especially psychotropic (or not at all, according to many published accounts), it's toxic but certainly nowhere near one of the most toxic mushrooms, nor does it naturally occur in the Middle East—the epicenter of Western religions (for which it has long been reported to have played a crucial role).

This book blows away the veil (smokescreen?) that has long perpetuated many myths surrounding this enigmatic mushroom. The author should be lionized for his careful sifting through countless published records and a "small mountain" of letters and documents from the Wasson archives at Harvard University and the Bodleian Library at Oxford. One of the strengths of a book like this, for me, is the extensive references, footnoted in each chapter and compiled at the end of the book.

The author told me that he has long been intrigued by magic mushrooms, and the idea for this book has been in his head since the 1980s. During the two years he spent researching the book, Andy interviewed a number of "experienced" 'shroom advocates, attended the Telluride Festival, and visited a number of hallucinogenic mushroom wholesalers in Amsterdam (try explaining THAT at tax time!).

Andy weaves a terrific story that climaxes with an intimate look into the life of a New York City banker (R. Gordon Wasson) who ultimately helped kick-start the psychedelic '60s (and was infiltrated by a CIA spy!) with a *Life* magazine article about Mexican mushrooms. Forget everything you've ever read about what came next! Cultural icons like Timothy Leary, Allen Ginsberg, Carlos Castaneda, Terence McKenna, Aldous Huxley, Robert Graves (author of *I, Claudius*), mycologist Rolf Singer, and even our beloved Charles McIlvaine are all stars in this epic saga.

While I'm confident that *Shroom* will not change the bemushroomed minds of those proselytizers of the Word of McKenna or Wasson, I strongly recommend it for educated mycophiles and mycologists.—*Britt*

The Fungal Pharmacy: Medicinal Mushrooms of Western Canada, by Robert Dale Rogers. Edmonton, Alberta: Prairie Deva Press, 2006. ISBN 0-9781358-1-4; 232 pp.

I first met Robert Dale Rogers at the NAMA Foray in Hinton, Alberta, and became intrigued with his book after hearing his talk on topics taken directly from *The Fungal Pharmacy*. He describes himself as a student of herbal medicines for over 30 years and has had a clinical practice for 16 years. Along with having an encyclopedic knowledge of the historical, cultural, and pharmacopoeial uses of fungi, he is an accomplished herbalist, having published several books

Continued on page 8

Book Reviews, continued from page 7

on the subject. Robert and his wife, Laurie Szott-Rogers, are owners of Self Heal Distributing, Scents of Wonder essential oils, and Prairie Deva College.

The Fungal Pharmacy covers the medicinal constituents, homeopathy, personality traits, essential oils, and myths/legends for numerous common wild mushrooms that occur throughout North America (not just western Canada, as the title states). One of the strengths of this book is in its layout of fungal genera in alphabetical order, which can be quickly navigated as a ready reference guide. I also like how the author lists some of the older names for many of the fungi (we all know how confusing the naming of fungi has become in recent times), along with the many common names used for a given species. Cultural myths and legends are described for most of the species covered and all are interesting, albeit unbelievable at times or recently debunked (see review of *Shroom* in this issue) by more scientific approaches.

There are abundant photographs; but sadly, many are of poor resolution, perhaps resulting from the quality of paper used during printing. Another handy feature is the Charts section at the end of the book. The charts are grouped by specific properties purported to be in various species of mushroom and are broken down into Medicinal Properties, Anti-Cancer Activity, Anti-Viral Activity, Anti-Microbial Activity, and Immune Function. As an example, in the chart for Anti-Viral Activity, several species are listed as having compounds that are useful in treating HIV. Unfortunately, if you attempt to flip to those species in the text of the book (in my copy, anyway), you'll be disappointed to find many of them missing from the book! In fact, in my copy, there were a few places where pages were missing while others were duplicated.

And this brings me to my biggest complaint about the book: there was clearly no semblance of editing performed before it was sent to the printers. There are numerous typographical errors throughout (I'm not talking one or two, but dozens), many resulting in my confusion at the very least, but sometimes rendering entire sentences incoherent. The author frequently cites published references—few of which are listed anywhere for the reader to look up—and many contain typographical errors that would hinder any further investigation. Some of the many spectacular claims are not referenced at all, for example:

> This fungus species [of *Dictyophora* which grows on hot, rocky lava flows [sic] of Hawai'i] produces a compound that is identical to or very closely mimics a compound in females during the sexual arousal stage . . . and when a woman smells this odour, a spontaneous, intense orgasm frequently occurs. More research is presently being carried out, as the market potential is huge.

I should say so! Now, why haven't I heard about this before? I would think work on all other drugs at the big pharmaceutical companies would come to a screeching halt (as it pretty much did during the development of Viagra and similar products) if word of this got out.

As interest in homeotherapies continues to grow, I'm sure this book will be welcomed by many. However, I recommend that interested readers look, instead, to one of the recent offerings of Paul Stamets (e.g. *Mycelium Running*).

Those wishing to purchase or inquire about *The Fungal Pharmacy* or related products are encouraged to go directly to the Self Heal Distributing Web site (www.planet.eon.net/~scents) where you will supposedly find everything you need to know about aromatherapy, essential oils, and plant essences. (The Rogerses are quick to point out that "Flower essences are not essential oils. They have no scent—except brandy. They are made from the vibrational energy of the plant, and unlike essential oils are taken internally to alter emotional states and soul patterns.")

Additionally, Robert and Laurie offer a number of educational courses through Prairie Deva College, which they own and operate.

Robert and Laurie also teach at Northern Star College of Mystical Studies. The college's Web site boasts that "Laurie Szott-Rogers has worked with aromatherapy for over a decade, creating products and concocting blends. She has a strong background in metaphysics and social science research, and teaches classes in Aromatherapy, Flower Essences, and Dreamtime."—*Britt*

Forays & Announcements, continued from page 3

Contact Gundi Jeffrey and Erik Purre, founders of Myco Aficionados of Mexico; Tel/fax (from El Norte): 011-52 (246) 461-8829 or e-mail <mexmush@yahoo.com>.

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Just arrived: Hodgson's *The Mushroom Poems*

Retired British biologist Joyce Hodgson has just finished a PhD in poetry and has produced six pamphlets of poetry on a variety of themes, including mushrooms. The Mycophile will feature more of Dr. Hodgson's work in the next issue, but you can order a copy of *The Mushroom Poems* (12 pages + photos) today for just $7, which covers postage and handling. Inquiries and orders can be directed to Britt Bunyard, Mycophile editor (contact information on page 2 of this issue).

Pipestem Foray, continued from page 1

be available (Bill co-authored with Alan Bessette). The companion, *Mushrooms of Northeastern North America,* is so useful in this area that this new publication will be a must for anyone living this side of the Mississippi.

Lodging features double beds, air conditioning, elevators, saunas, indoor pool, game room, fitness room, large lobby, and small social areas near many of the rooms in McKeever.

Mountain Creek Lodge is situated deep in the Gorge, at the Bluestone River, accessed by a tram. It is a tempting spot to just relax and enjoy or stroll along the river. The tram ride, always fun, offers a bird's eye view of plants and animals below.

Note that all registration room assignments will be in McKeever Lodge on Thursday, with Trustees arriving on Tuesday evening for their Wednesday meeting.

Travel info: Suggested airports are Blacksburg, VA, or Charleston, WV; I-77 is fairly close, and I-81 is within a reasonable driving distance. The towns of Princeton and Beckley are not far away.

If you have never experienced West Virginia, be prepared for a state with an emphasis on its rustic heritage. Plan to stay over and visit some of the attractions. Note that a notification to the park for additional days is recommended, but you must do it personally after you have registered with Ann. If you wish to extend your stay, the Pipestem telephone number is (304) 466-1800. However, we do not suggest contacting the park for other reasons.

You can visit an old coal mine in Bluefield, shop at the strictly local crafts organization at Tamarack in Beckley (we are talking beautiful and high-end crafts). Not too far away is the famous Greenbrier at White Sulphur Springs. Pipestem is south of the extensive Monongahela National Forest, a must for any naturalist's visit to the state. The Forest is also home to the National Astronomical Radio Observatory, a cathedral in itself.

Our wonderful registrar, Ann Bornstein, is prepared to handle almost all questions, in her customary stylish manner. Make plans and please note the early cut-off for registrations.

—Allein Stanley

A MOST MYSTSERIOUS FUNGUS!

If you're like me, you were no doubt scratching your head when you saw this issue's Fungus of the Month. Thanks to members of the Prairie State club for finding it, Jim Frink for photographing it, and Dean Abel for identifying it. I scoured my guidebooks and came up with only one (that I can recall) brief description (by Arora, calling it very rare). For those wishing more information, Deal can help.

If you Google "Podostroma" for Images, you get a lot of things that look like *Cordyceps* or *Clavariadelphus* or immature *Xylaria*. But the true "Doughboy Fingers," although related to *Hypocrea* (they both have asci with 16 half spores—also called part spores), is clavate rather than pulvinate.

The genus is described in *Pyrenomycetous Fungi* (Wehmeyer) and *British Ascomycotina* (Cannon, Hawksworth, Sherwood-Pike), but in both cases they say it "occurs on soil" or "on the ground in coniferous woods." However, in *Fungi of Switzerland: Ascomycetes #316* it is clearly growing on wood, and in *Studies in Mycology 42* (Rossman, Samuels, Rogerson, Lowen) they state it occurs "on decaying woody substrata." Our specimens were growing on a large downed hardwood log. The last reference also synonymizes *Podostroma alutaceum* and *P. leucopus*.

They were as big as my fingers. Jim led us to the site during a Prairie State Mushroom Club foray at Wildcat Den State Park east of Muscatine, IA, last Sep. 9. The fruitbodies were initially discovered in late August and were photographed for several weeks.

Editorial, continued from page 2

clubs. Recent discussions with representatives from several of the larger local clubs have confirmed that MOST members opt for e-mailed or Web site versions of their newsletters when these are offered. That is encouraging to hear. Besides tremendous savings of costs to NAMA—alleviating the need for hikes in dues in the near future—it also means a lot more trees out there in the forests to support the mushrooms we so enjoy pursuing!

If you have feedback to any of these ideas or have suggestions of your own on how to improve the newsletter, don't hesitate to contact me or your NAMA leaders. See you in West Virginia this summer!—*Britt*

Fungi in the News, continued from page 6

there are a few really interesting videos showing time-lapse footage of fungi growing and developing. One video in particular is outstanding. (The narration in is in Japanese, but it really needs no words.) Simply go to the You Tube site and search for "Fungi in the Jungle." You'll watch as slime molds pulse and course over their substrates, *Cordyceps* develop fruitbodies from the exoskeletons of insects, and entomophthoras do their business. It's some truly fabulous filmwork!

And last . . . we bid a sad farewell to **Mycologist.** Volume 20:4 of the British Mycological Society's *Mycologist* will be the last issue ever for that wonderful journal geared towards amateurs and professionals alike. With the passing of *Mycologist* I hope authors who previously would have sent manuscripts to that journal will now send them to NAMA's renewed and warmly received journal *McIlvainea. —Britt*

NAMA Mushroom Teaching Kits

NAMA has prepared two Mushroom Teaching Kits, which are available for rental. The Kits provide materials about fungi for teachers, naturalists, mushroom clubs, nature organizations, libraries and science museums, as well as for displays at mushroom and garden fairs.

The Eastern Mushroom Teaching Kit contains material suitable for the United States east of the Mississippi and eastern Canada. The Western Mushroom Teaching Kit contains material suitable for the western States and the western part of Canada. The contents of the Kits are similar, with a geographical variation in the photos, dried fungal samples and spore prints, and some instructional materials.

The Kits provide:

A. The basic information necessary to teach grades K–8 about fungi. The information is divided into grades K–3 and 4–8. A 45-minute lesson plan is provided for the classroom teacher, including handouts of questions and answers for both K–3 and 4–8 students, which can be copied. Handouts for further activities, both indoors and outdoors, can be copied as well. Most of the material can also be used successfully in high school classes and in college entry-level courses in mycology and ecology.

B. Media, books and instructional materials

C. Hands-on classroom aids

D. Activity ideas which include scientific, artistic, and cultural approaches

Contents of Eastern Mushroom Training Kit

A. Media (See also "Instructional Materials")

1. DVDs: "The Mushroom Identification Trilogy" and "Treasures from the Kingdom of Fungi" (Taylor Lockwood)
2. CD: "MykoCD" (Mike Wood)
3. Videocassette: "Slime Molds" and Teachers Guide (Iowa State Univ.)
4. 18 laminated spore prints
5. 25 plastic hand lenses
6. 13 dried fungi samples
7. Foam blocks and skewers to mount fresh specimens in the classroom
8. "Foldable magnifier" (110 diameter, 2x magnification)
9. Mushroom Dye Chart, Little Wool Gnome and Skeins to Illustrate Dyeing with Mushrooms (Sue Hopkins)

B. Books

1. *Mushrooms for Color* (Rice)
2. *Mushrooms of the World Coloring Book* (Arora, Bowers)
3. *Mushrooms for Paper* (Rice)
4. *A Young Person's Guide to the Fungi* (Kendrick)
5. *A New Home for "L'il Gnome"* (Parker)
6. *Katya's Book of Mushrooms* (Arnold, Swope)
7. *North American Mushroom Photo Postcards* (Johnson)
8. *Fungi* (Watling)
9. *The Audubon Society Field Guide to North American Mushrooms* (Lincoff)
10. *The Fungus That Ate My School* (Dorros)

C. Instructional Materials

1. Illustrations of fungi on 4" x 5" poster board
2. "North Carolina Notebook," 2 laminated sheets (Wildlife in North Carolina, Nov. 2000)
3. Lesson ideas and activities relating to fungi for grades K–12 (NAMA Web site)
4. 9 overhead transparencies illustrating How Mushrooms Grow, the Variety of Shapes and Spore Bearing Surfaces, and Fungal Ecology (Louise Freedman)
5. 3 posters on careers in mycology (Mycological Society of America)
4. Poster on Mushroom Poisonings and Their Medical Treatment (Scates)
5. 26 slides, or same photos on CD, as requested
6. Fungi teaching materials (Sundberg)
7. "Easy Key to Common Mushrooms" (Scates)

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Contents of the Western Mushroom Teaching Kit

A. Media (See also "Instructional Materials")

1. Audiotape cassette & script: "Latin Pronunciation of Mushroom Names"
2. DVD: "The Mushroom Identification Trilogy" (Taylor F. Lockwood
3. CD: "MykoCD" (Mike Wood)
4. Videocassette: "Slime Molds" and Teachers Guide (Univ. of Iowa)
5. Box & Folder: "The Polypore Box" and Polypore Descriptions
6. Folder: "Dye Mushrooms"—three display cards
7. CD cases: Three mushroom spore prints in CD cases

8. CD Cases (2 empty), skewers, Field Identification Slips, Spore Print (b/w) paper
9. Hand lenses—25 magnifying lenses in plastic cases
10. Box: "Foldable Magnifier" (110 dia., 2x magnification)
11. Microscope + CD + Instruction Booklet "Intel Cx3 Computer Microscope

B. Books

1. *All That the Rain Promises, and More* (Arora)
2. *The Romance of the Fungus World* (Rolfe & Rolfe)
3. *Guide to Western Mushrooms* (Underhill)
4. *Mushrooms for Color* (Rice)
5. *Fungi* (Watling)
6. *Mushrooms and Other Fungi of Land Between the Lakes* (TVA)
7. *Mushroom, the Journal of Wild Mushrooming* (Issue 37, Fall 2005)
8. *Mushrooms of the World Coloring Book* (Arora, Bowers)
9. *A Young Person's Guide to the Fungi* (Kendrick)
10. *Katya's Book of Mushrooms* (Arnold & Swope)
11. *The Mushroom That Ate My School* (Dorros)

C. Instructional Materials

1. Notebook: "Ideas for Class Activities Related to Mushrooms," containing:

   Posters: "What Can You Do with Training in Mycology?" (2) (MSA)

   Slides & List of Fungus Names, 3 folders:
   1. Gilled & Fleshy Pored Basidiomycetes
   2. Non-gilled Basidiomycetes
   3. Ascomycetes

   40 Slides, or same photos on CD, as requested

   List: "A Few Websites – Can You Add More?"

   Article and colored prints: "Mushroom Spore Printing"

   Transparencies: "Some Edible Mushrooms" (2 transparencies)

   Transparencies with Teachers' Guide Sheets: "How Mushrooms Grow" (9 each; Dr. Walt Sundberg)

   Journal articles: "A Few Mycorrhizal Factoids" and "Mycorrhizas, the Source of All That Is Good?" (Dr. Steve Trudell)

   Transparencies: "Herb & Tree Associates for Many Fungi" (4)

   Transparencies: "How Mushrooms Grow" (9; Louise Freedman)

   Miscellaneous additional instructional study sheets and guides

2. Notebook: NAMA Educational Programs from the NAMA Website: 32 plastic folders of Teachers' Instructional Materials (see Table of Contents for list in second plastic folder) Articles: "Fine Paper from Mushrooms" (Rice)
3. Instructional units: Mold Control and Environmental Health" (EHSC Community Outreach & Education Program, Oregon State University, Corvallis)

◆

So you'd like to rent a NAMA Mushroom Teaching Kit: The rental fee for borrowing either of these programs: for NAMA members: $40.00; for non-members: $50.00. Return postage and insurance for $150.00, ground service, ***signature required,*** UPS, FedEx, or USPS, will be paid by the renter.

A request* for renting the program for 7–10 days, together with a check or money order made out to North American Mycological Association, can be sent to:

Eastern Mushroom Teaching Kit
Carol Dreiling
380 Curtis Parker Road
Alexander, NC 28701-9667
caroldrei@aol.com
(828) 683-8678

Western Mushroom Teaching Kit
Maggie Rogers
1943 S.E. Locust Avenue
Portland, OR 9721404826
rogersmm@aol.com
(503) 239-4321

*Requests should include a description of the targeted audience and geographic area so appropriate material can be sent in the Kit.

If you have materials you think would be useful to teachers and would like us to consider adding them to the Kits, please contact Carol Dreiling, caroldrei@aol.com, Maggie Rogers, rogersmm@aol.com, or Sandy Sheine, ssheine@aol.com, and plan to send a sample of your materials.

For more information on NAMA Education programs, check the NAMA Web site: www.namyco.org.

Acknowledgments

Many thanks to the NAMA members who have contributed to the contents of the Kits: Dean Abel, Carol Dreiling, Louise and Bill Freedman, Catharine Gunderson, Susan Hopkins, Emily Johnson, Jean-Paul Latil, Taylor Lockwood, Theresa Oursler, Nancy Parker, Samuel Ristich, Maggie Rogers, Sandy Sheine, Allein Stanley, Caryl Widderson, Walt Sundberg, Mike Wood.

North American Mycological Association
336 Lenox Avenue
Oakland, CA 94610-4675

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THE MYCOPHILE

Mushroom of the Month

What IS the identity of this rarely seen fungus, found fruiting recently by members of the Prairie State club? All will be revealed inside this issue (see page 9). Photo courtesy of Jim Frink.